CLAIMS:

1. Optical disc drive apparatus (1) for reading or writing optical discs (2), comprising:

- an optical system (30) for scanning a track of an optical disc, the optical system (30) comprising at least one displaceable element (34) and at least one detector (35) for receiving an optical beam (32d) and generating a read signal (S_R);
- an actuator system (50) comprising at least one controllable actuator (51, 52, 53) for positioning said displaceable element (34);
- a control system (90) for receiving and processing said read signal (S_R) from said detector (35) and for generating a control signal (S_{CR}, S_{CF}, S_{CT}) for said at least one controllable actuator (51, 52, 53) on the basis of at least one error signal component (REN, FEN) of said read signal (S_R);
- the control system (90) having variable settings;
- the control system (90) being designed to perform a frequency analysis of at least one control signal component (MIRN) of said read signal (S_R), and to set its settings on the basis of the results of said frequency analysis.

2. Optical disc drive apparatus according to claim 1, wherein said at least one control signal component (MIRN) of said read signal (S_R) for frequency analysis is the normalized mirror signal (MIRN).

3. Optical disc drive apparatus according to claim 1, wherein the control system (90) is designed to detect and classify disc defects on the basis of the results of said frequency analysis, and to set its settings on the basis of the classification of a detected defect.

4. Optical disc drive apparatus according to claim 3, wherein the control system (90) is designed to set:

- a first setting in the case of normal operation;

- a second setting different from said first setting if it detects a short disc defect such as a black dot or a scratch;
- a third setting different from any of said first and second settings if it detects a long disc defect such as a fingerprint.

5. Optical disc drive apparatus according to claim 1, wherein the frequency analysis performed by said control system (90) is a time-frequency analysis.

6. Optical disc drive apparatus according to claim 5, wherein the time-frequency analysis performed by said control system (90) is a discrete wavelet analysis.

7. Optical disc drive apparatus according to claim 6, wherein the control system (90) is designed to select a setting for short defects if a detail coefficient at scale 2 or 3 (cD2 or cD3) has a signal level above a predetermined threshold level.

8. Optical disc drive apparatus according to claim 7, wherein the control system (90) is designed, at the moment when the signal level of said detail coefficient at scale 2 or 3 (cD2 or cD3) rises above said predetermined threshold level, to capture the signal level of the said at least one signal component (MIRN) of said read signal (S_R) which is being time-frequency analysed, and to switch back to a setting for normal operation if the signal level of said detail coefficient at scale 2 or 3 (cD2 or cD3) has dropped below said predetermined threshold level and the signal level of the said at least one signal component (MIRN) of said read signal (S_R) which is being time-frequency analysed has risen above said captured signal level.

9. Optical disc drive apparatus according to claim 7, wherein the control system (90) is designed to select a setting for long defects if a detail coefficient at scale 6 or 7 or 8 (cD6 or cD7 or cD8) has a signal level above a predetermined threshold level while all detail coefficients at lower scales have signal levels below predetermined threshold levels.

10. Optical disc drive apparatus according to claim 1, wherein the control system (90) comprises:

- a signal processor (71) for processing the read signal (S_R) from the detector (35) and for generating said error signal components (REN, FEN) and said control signal component (MIRN);
- a plurality of controllers (81, 82, 83), which each have an input receiving an error signal component (REN), each controller being designed to generate an actuator control signal (S_{CR1}, S_{CR2}, S_{CR3}), respectively, and each controller having optimized settings for use in specific situations;
- a controllable switch (73) having a plurality of inputs (73a, 73b, 73c) coupled to the respective outputs of said controllers (81, 82, 83), and having an output (73d) coupled to an output (93) of the control circuit (90), the switch being designed to selectively couple its output (73d) to one of its inputs (73a, 73b, 73c) on the basis of a control signal (S_{CS}); and a signal analyser (72) having an input receiving a control output signal (MIRN) from the signal processor (71), and having an output for generating said control signal (S_{CS}) for controlling said controllable switch (73).

11. Optical disc drive apparatus according to claim 1, wherein the control system (90) comprises:
- a signal processor (71) for processing the read signal (S_R) from the detector (35) and for generating said signal components (REN, FEN) and said control signal component (MIRN);
- a controller (80), having an input receiving an error signal component (REN) and having an output coupled to an output (93) of the control circuit (90), said controller being designed to generate an actuator control signal (S_{CR}), said controller having a plurality of optimized settings (86, 87, 88) for use in specific situations;
- a controllable switch (73) having an output coupled to said controller (80), for selectively setting one of the controller settings (86, 87, 88) on the basis of a control signal (S_{CS});
- and a signal analyser (72) having an input receiving a control output signal (MIRN) from the signal processor (71), and having an output for generating said control signal (S_{CS}) for controlling said controllable switch (73).

12. Method for discriminating different types of disc defects in an optical disc drive apparatus (1), the disc drive apparatus (1) comprising:

- scanning means (30) for scanning a record track of an optical disc (2) and for generating a read signal (S_R), the scanning means (30) comprising at least one displaceable read/write element (34);
- actuator means (50) for controlling the positioning of said at least one read/write element (34) with respect to the disc (2);
- a control circuit (90) for receiving said read signal (S_R) and generating at least one actuator control signal (S_{CR}, S_{CF}, S_{CT}) on the basis of at least one error signal component (REN, FEN) of said read signal (S_R), the control circuit (90) having a plurality of predetermined controller settings;

the method comprising the steps of:

- deriving from said read signal (S_R) at least one control signal component (MIRN);
- performing a frequency analysis of said at least one control signal component (MIRN);
- selectively setting one of said plurality of predetermined controller settings on the basis of the results of said frequency analysis.